FIG. 1

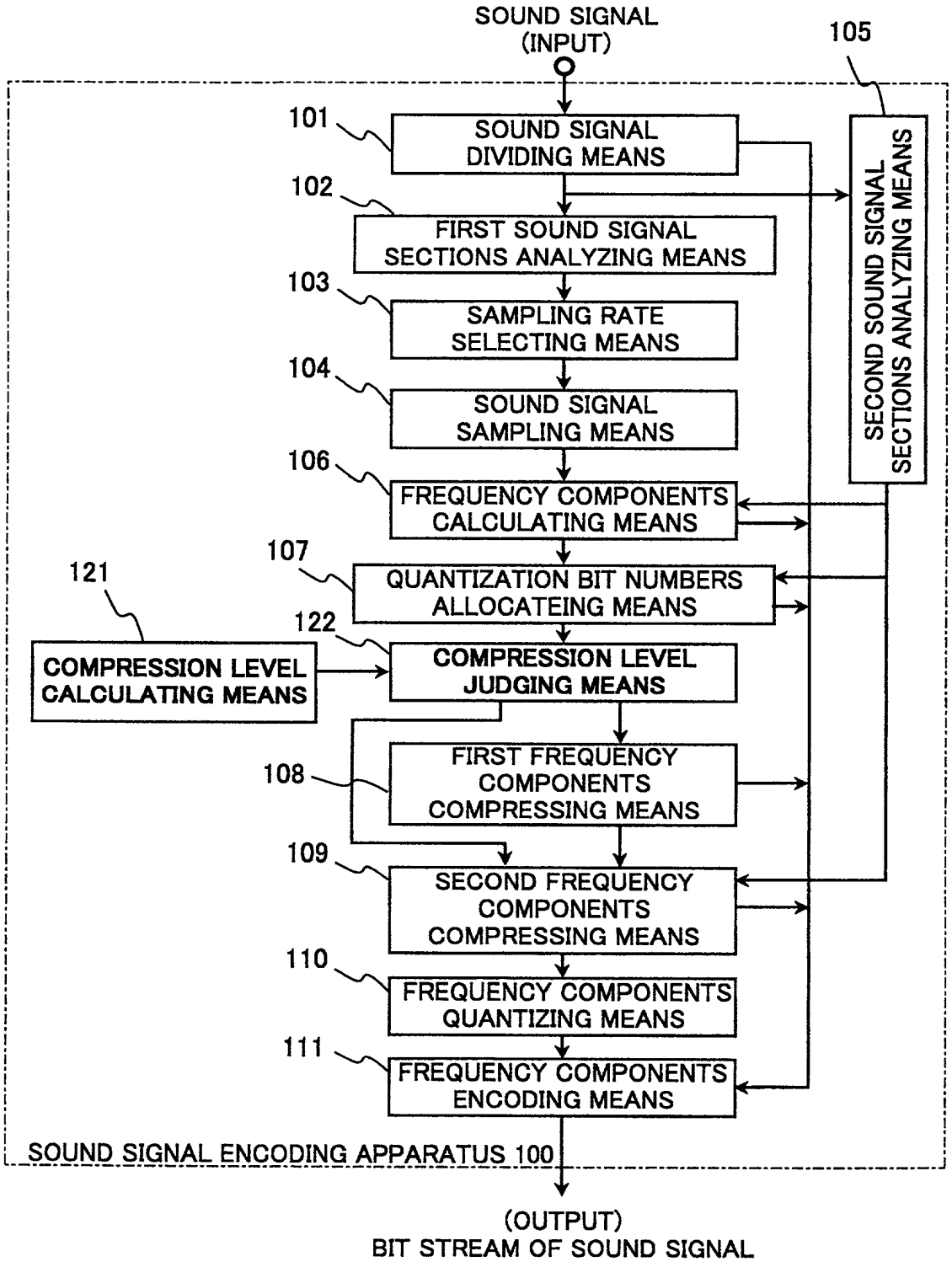

SOUND SIGNAL
(INPUT)
105
101
SOUND SIGNAL
DIVIDING MEANS
102
FIRST SOUND SIGNAL
SECTIONS ANALYZING MEANS
103
SAMPLING RATE
SELECTING MEANS
104
SOUND SIGNAL
SAMPLING MEANS
106
FREQUENCY COMPONENTS
CALCULATING MEANS
107
QUANTIZATION BIT NUMBERS
ALLOCATEING MEANS
121
122
COMPRESSION LEVEL
CALCULATING MEANS
COMPRESSION LEVEL
JUDGING MEANS
108
FIRST FREQUENCY
COMPONENTS
COMPRESSING MEANS
109
SECOND FREQUENCY
COMPONENTS
COMPRESSING MEANS
110
FREQUENCY COMPONENTS
QUANTIZING MEANS
111
FREQUENCY COMPONENTS
ENCODING MEANS
SECOND SOUND SIGNAL
SECTIONS ANALYZING MEANS
SOUND SIGNAL ENCODING APPARATUS 100
(OUTPUT)
BIT STREAM OF SOUND SIGNAL

FIG. 2

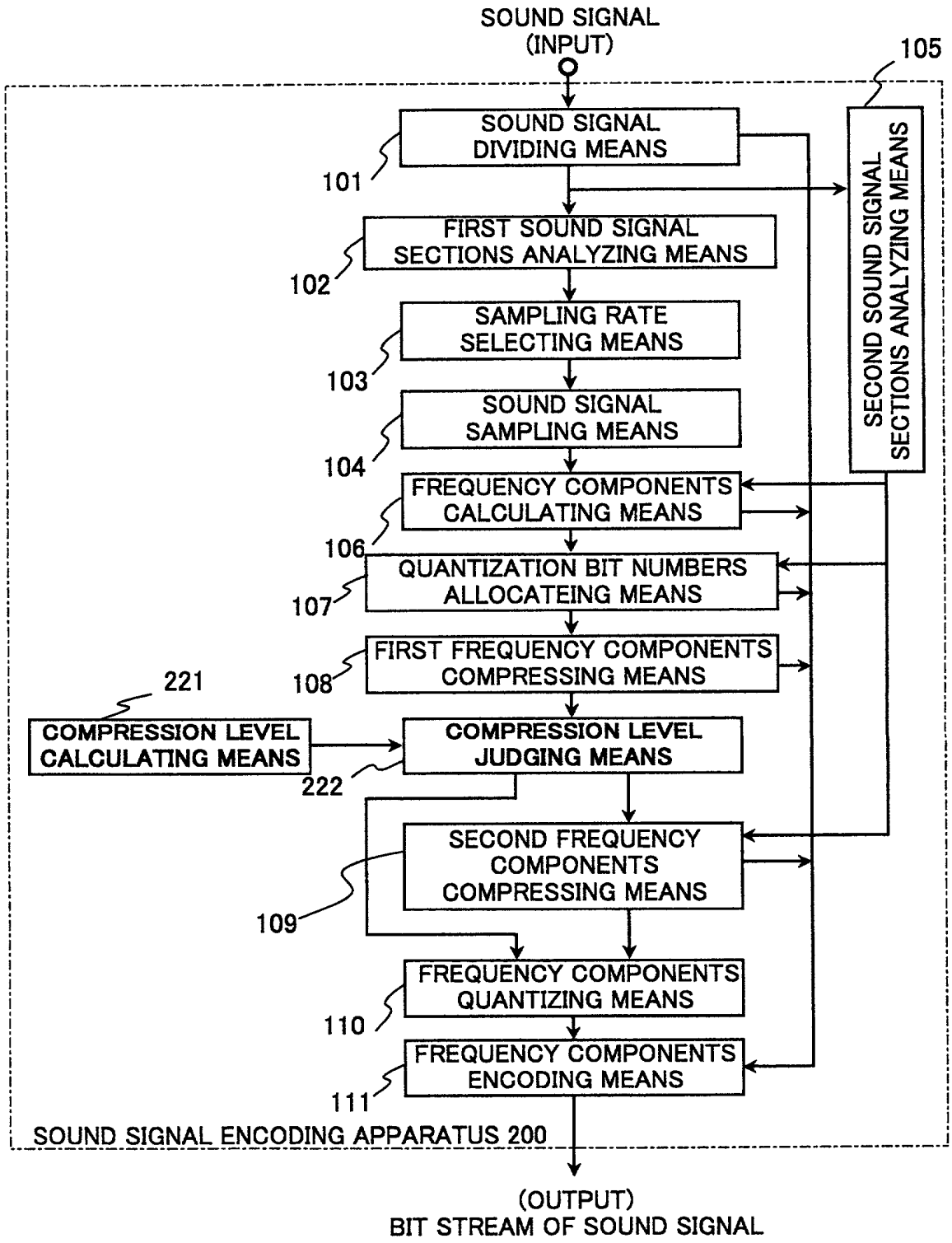

SOUND SIGNAL
(INPUT)
105
SOUND SIGNAL
DIVIDING MEANS
101
FIRST SOUND SIGNAL
SECTIONS ANALYZING MEANS
102
SAMPLING RATE
SELECTING MEANS
103
SOUND SIGNAL
SAMPLING MEANS
104
FREQUENCY COMPONENTS
CALCULATING MEANS
106
QUANTIZATION BIT NUMBERS
ALLOCATEING MEANS
107
FIRST FREQUENCY COMPONENTS
COMPRESSING MEANS
108
221
COMPRESSION LEVEL
CALCULATING MEANS
COMPRESSION LEVEL
JUDGING MEANS
222
SECOND FREQUENCY
COMPONENTS
COMPRESSING MEANS
109
FREQUENCY COMPONENTS
QUANTIZING MEANS
110
FREQUENCY COMPONENTS
ENCODING MEANS
111
SECOND SOUND SIGNAL
SECTIONS ANALYZING MEANS
SOUND SIGNAL ENCODING APPARATUS 200
(OUTPUT)
BIT STREAM OF SOUND SIGNAL

FIG. 3

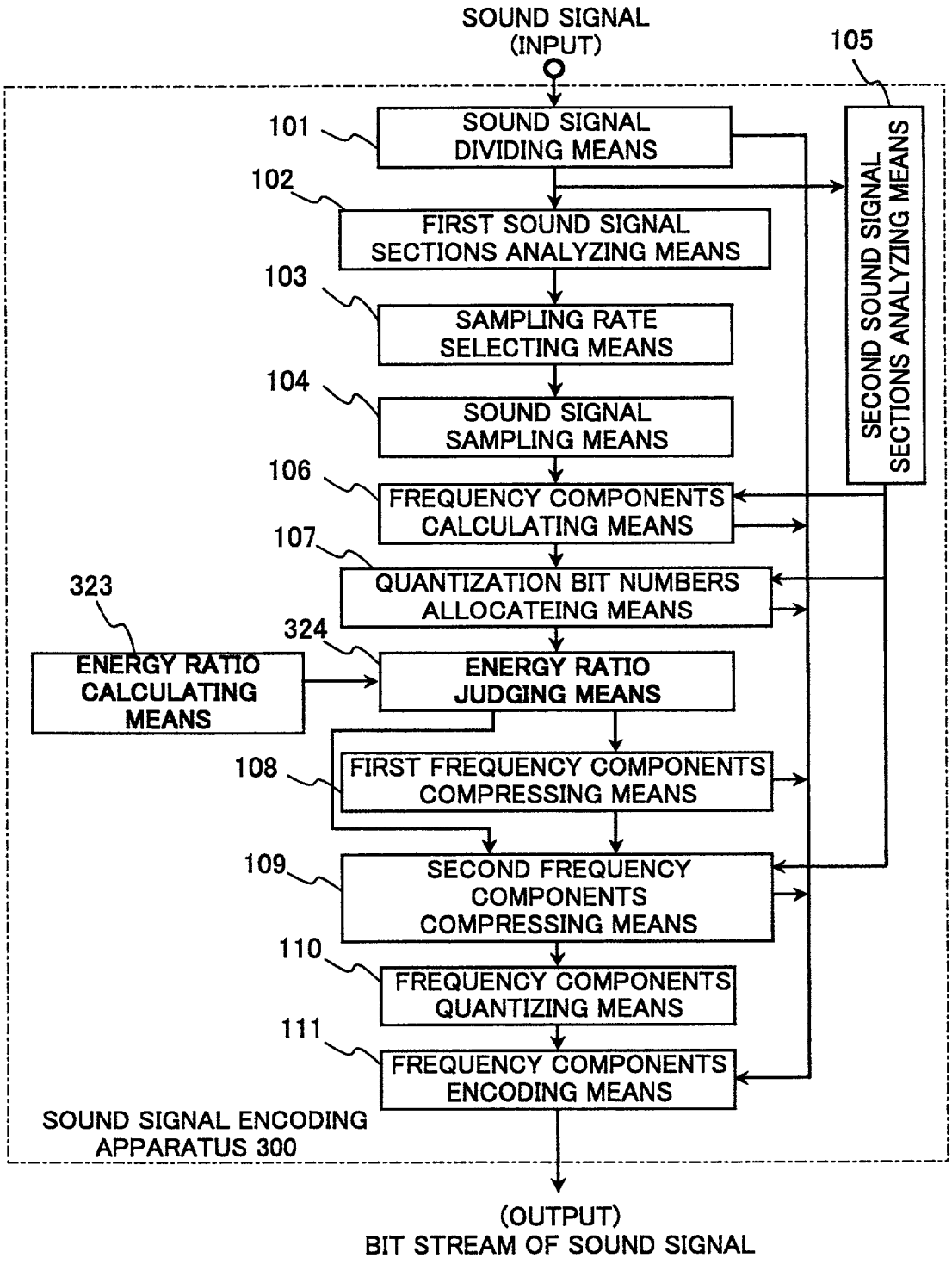

SOUND SIGNAL
(INPUT)
105
101
SOUND SIGNAL
DIVIDING MEANS
102
FIRST SOUND SIGNAL
SECTIONS ANALYZING MEANS
103
SAMPLING RATE
SELECTING MEANS
104
SOUND SIGNAL
SAMPLING MEANS
106
FREQUENCY COMPONENTS
CALCULATING MEANS
107
QUANTIZATION BIT NUMBERS
ALLOCATEING MEANS
323
ENERGY RATIO
CALCULATING
MEANS
324
ENERGY RATIO
JUDGING MEANS
108
FIRST FREQUENCY COMPONENTS
COMPRESSING MEANS
109
SECOND FREQUENCY
COMPONENTS
COMPRESSING MEANS
110
FREQUENCY COMPONENTS
QUANTIZING MEANS
111
FREQUENCY COMPONENTS
ENCODING MEANS
SECOND SOUND SIGNAL
SECTIONS ANALYZING MEANS
SOUND SIGNAL ENCODING
APPARATUS 300
(OUTPUT)
BIT STREAM OF SOUND SIGNAL

FIG. 4

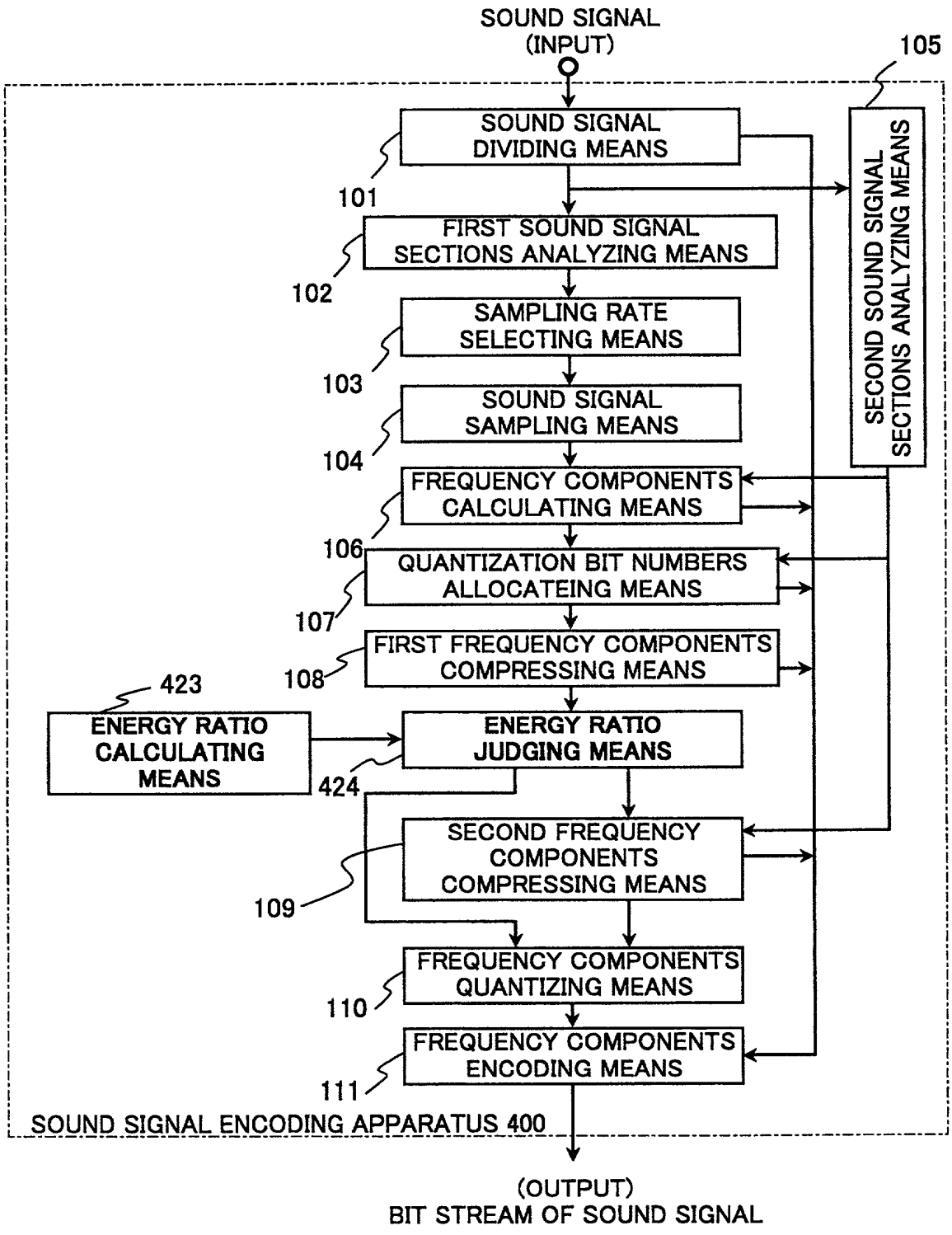

SOUND SIGNAL
(INPUT)
105
SOUND SIGNAL
DIVIDING MEANS
101
FIRST SOUND SIGNAL
SECTIONS ANALYZING MEANS
102
SAMPLING RATE
SELECTING MEANS
103
SOUND SIGNAL
SAMPLING MEANS
104
FREQUENCY COMPONENTS
CALCULATING MEANS
106
QUANTIZATION BIT NUMBERS
ALLOCATEING MEANS
107
FIRST FREQUENCY COMPONENTS
COMPRESSING MEANS
108
423
ENERGY RATIO
CALCULATING
MEANS
ENERGY RATIO
JUDGING MEANS
424
SECOND FREQUENCY
COMPONENTS
COMPRESSING MEANS
109
FREQUENCY COMPONENTS
QUANTIZING MEANS
110
FREQUENCY COMPONENTS
ENCODING MEANS
111
SECOND SOUND SIGNAL
SECTIONS ANALYZING MEANS
SOUND SIGNAL ENCODING APPARATUS 400
(OUTPUT)
BIT STREAM OF SOUND SIGNAL

FIG. 5

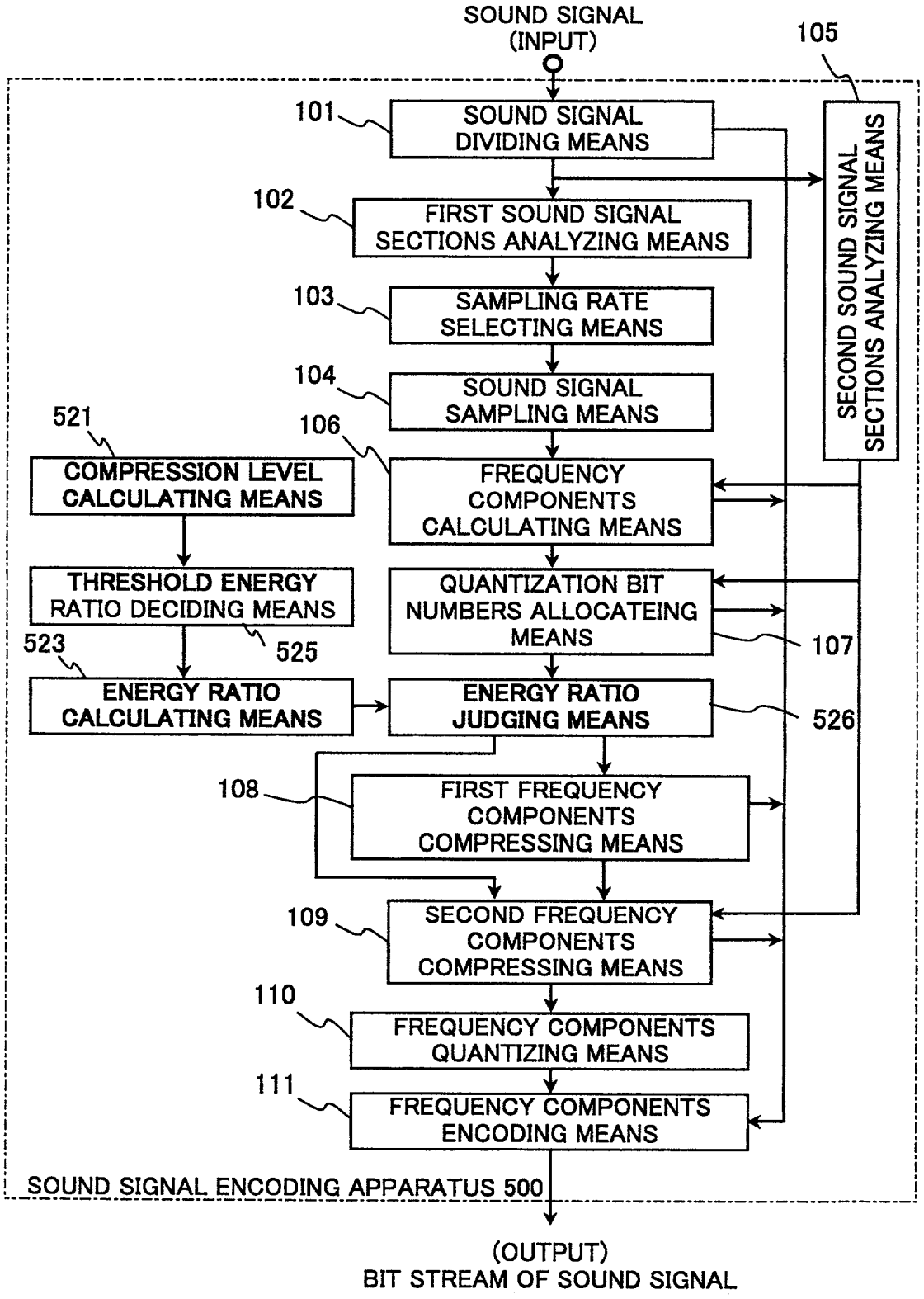

SOUND SIGNAL
(INPUT)
105
101
SOUND SIGNAL
DIVIDING MEANS
SECOND SOUND SIGNAL
SECTIONS ANALYZING MEANS
102
FIRST SOUND SIGNAL
SECTIONS ANALYZING MEANS
103
SAMPLING RATE
SELECTING MEANS
104
SOUND SIGNAL
SAMPLING MEANS
521
106
COMPRESSION LEVEL
CALCULATING MEANS
FREQUENCY
COMPONENTS
CALCULATING MEANS
THRESHOLD ENERGY
RATIO DECIDING MEANS
QUANTIZATION BIT
NUMBERS ALLOCATEING
MEANS
107
523
525
ENERGY RATIO
CALCULATING MEANS
ENERGY RATIO
JUDGING MEANS
526
108
FIRST FREQUENCY
COMPONENTS
COMPRESSING MEANS
109
SECOND FREQUENCY
COMPONENTS
COMPRESSING MEANS
110
FREQUENCY COMPONENTS
QUANTIZING MEANS
111
FREQUENCY COMPONENTS
ENCODING MEANS
SOUND SIGNAL ENCODING APPARATUS 500
(OUTPUT)
BIT STREAM OF SOUND SIGNAL

FIG. 6

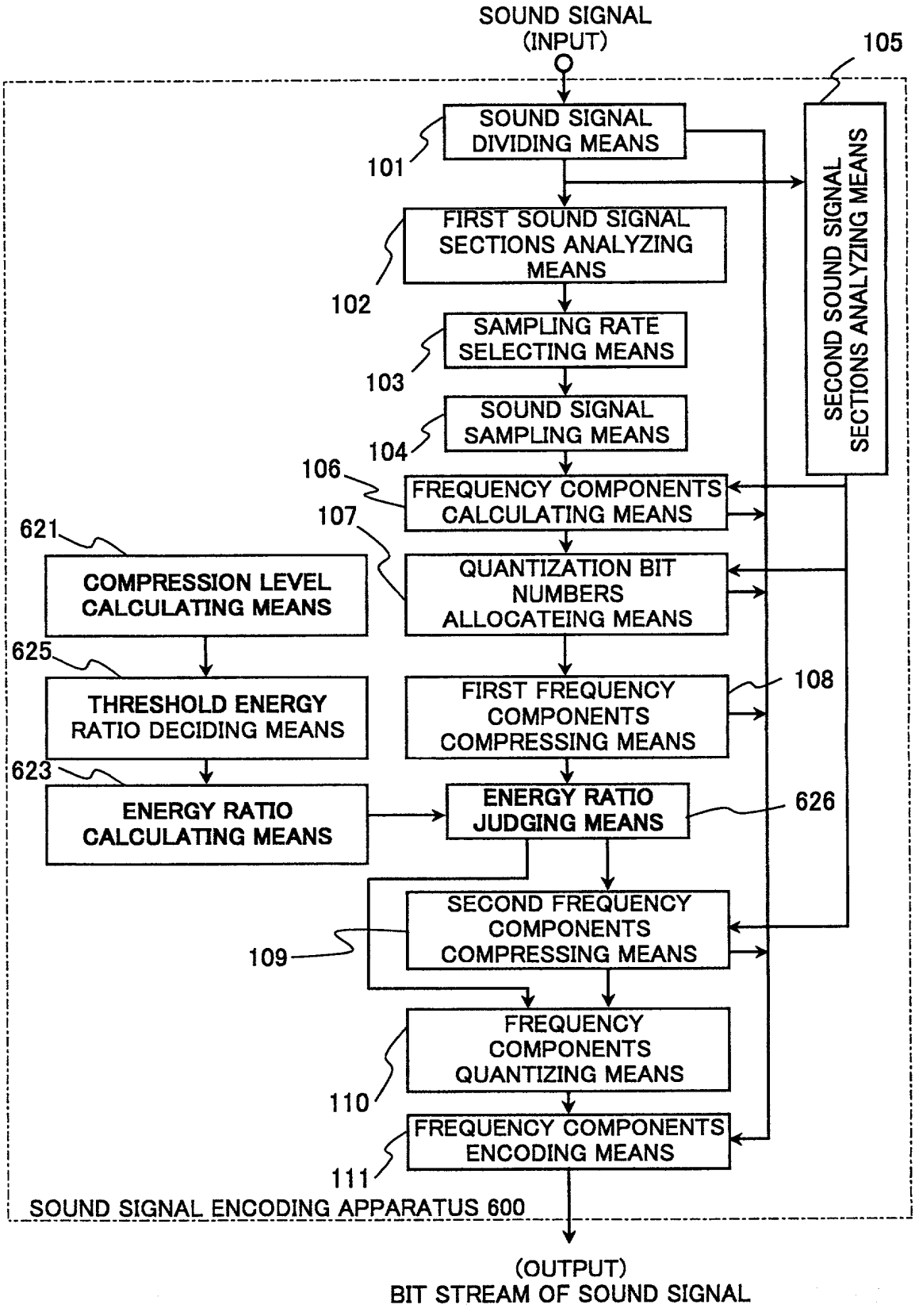

SOUND SIGNAL
(INPUT)
105
SOUND SIGNAL DIVIDING MEANS
101
FIRST SOUND SIGNAL SECTIONS ANALYZING MEANS
102
SECOND SOUND SIGNAL SECTIONS ANALYZING MEANS
SAMPLING RATE SELECTING MEANS
103
SOUND SIGNAL SAMPLING MEANS
104
106
FREQUENCY COMPONENTS CALCULATING MEANS
107
621
COMPRESSION LEVEL CALCULATING MEANS
QUANTIZATION BIT NUMBERS ALLOCATEING MEANS
625
THRESHOLD ENERGY RATIO DECIDING MEANS
FIRST FREQUENCY COMPONENTS COMPRESSING MEANS
108
623
ENERGY RATIO CALCULATING MEANS
ENERGY RATIO JUDGING MEANS
626
SECOND FREQUENCY COMPONENTS COMPRESSING MEANS
109
FREQUENCY COMPONENTS QUANTIZING MEANS
110
FREQUENCY COMPONENTS ENCODING MEANS
111
SOUND SIGNAL ENCODING APPARATUS 600
(OUTPUT)
BIT STREAM OF SOUND SIGNAL

FIG. 7

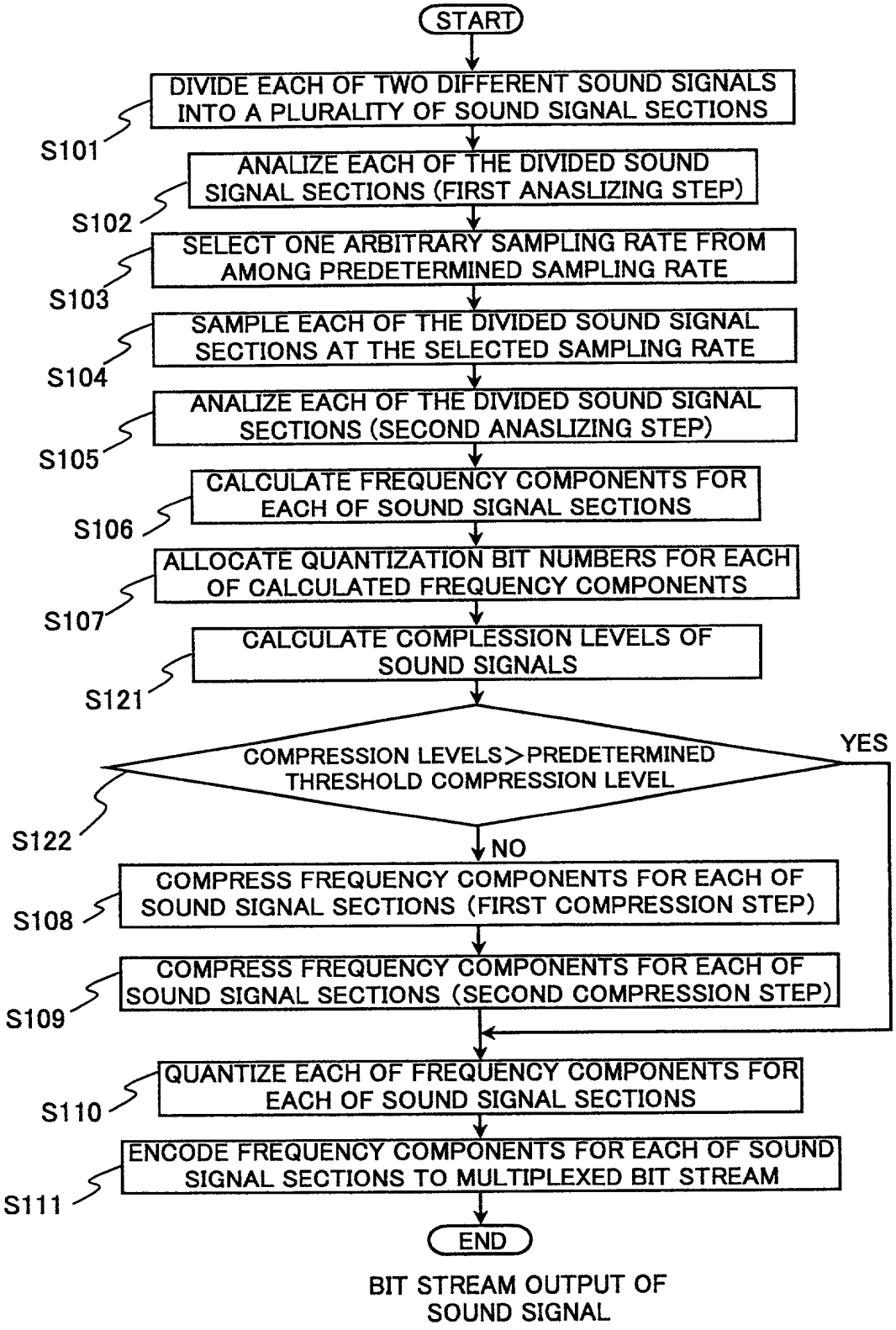

START
DIVIDE EACH OF TWO DIFFERENT SOUND SIGNALS INTO A PLURALITY OF SOUND SIGNAL SECTIONS
S101
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (FIRST ANASLIZING STEP)
S102
SELECT ONE ARBITRARY SAMPLING RATE FROM AMONG PREDETERMINED SAMPLING RATE
S103
SAMPLE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS AT THE SELECTED SAMPLING RATE
S104
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (SECOND ANASLIZING STEP)
S105
CALCULATE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S106
ALLOCATE QUANTIZATION BIT NUMBERS FOR EACH OF CALCULATED FREQUENCY COMPONENTS
S107
CALCULATE COMPLESSION LEVELS OF SOUND SIGNALS
S121
COMPRESSION LEVELS>PREDETERMINED THRESHOLD COMPRESSION LEVEL
YES
S122
NO
COMPRESS FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS (FIRST COMPRESSION STEP)
S108
COMPRESS FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS (SECOND COMPRESSION STEP)
S109
QUANTIZE EACH OF FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S110
ENCODE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS TO MULTIPLEXED BIT STREAM
S111
END
BIT STREAM OUTPUT OF SOUND SIGNAL

FIG. 8

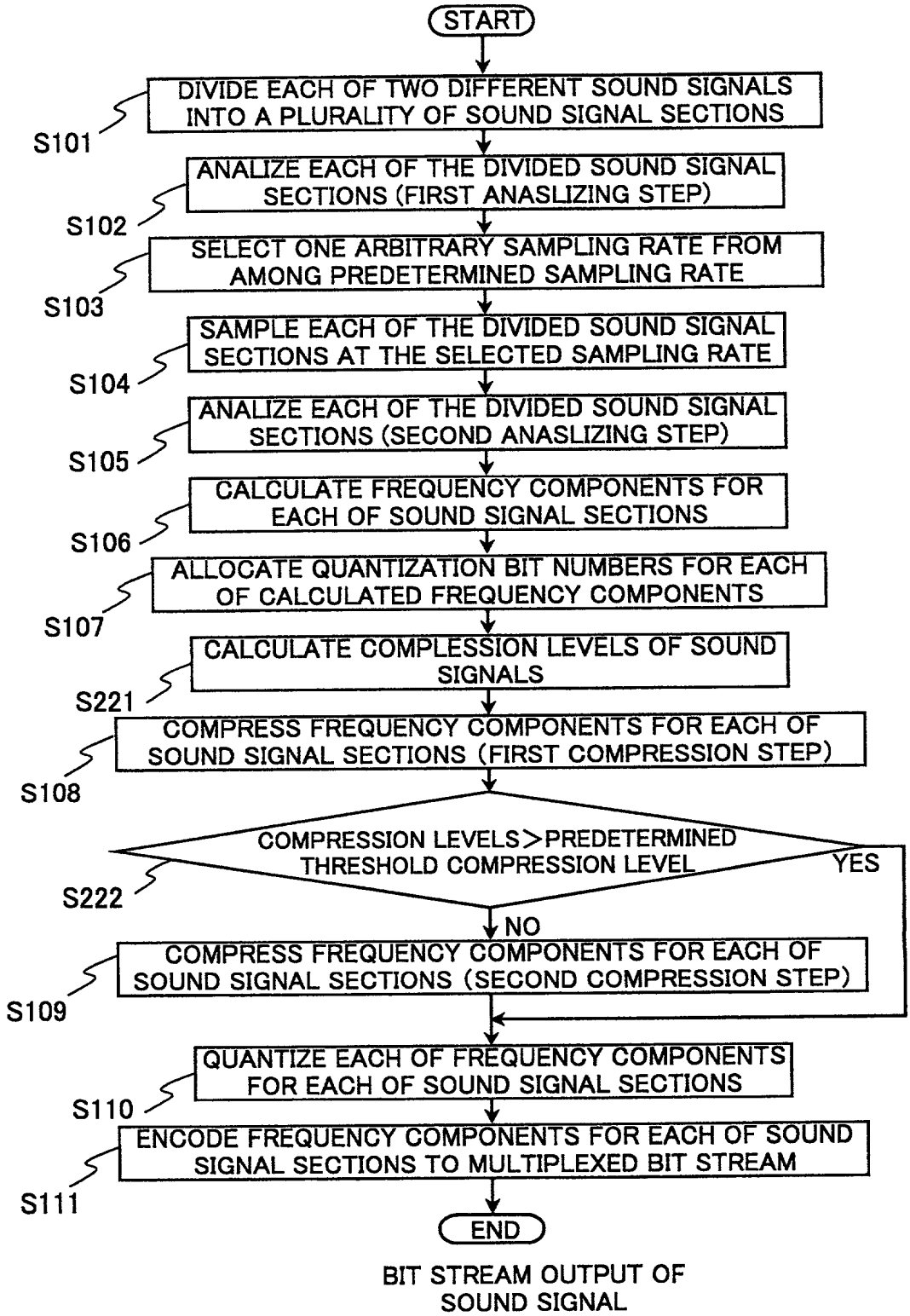
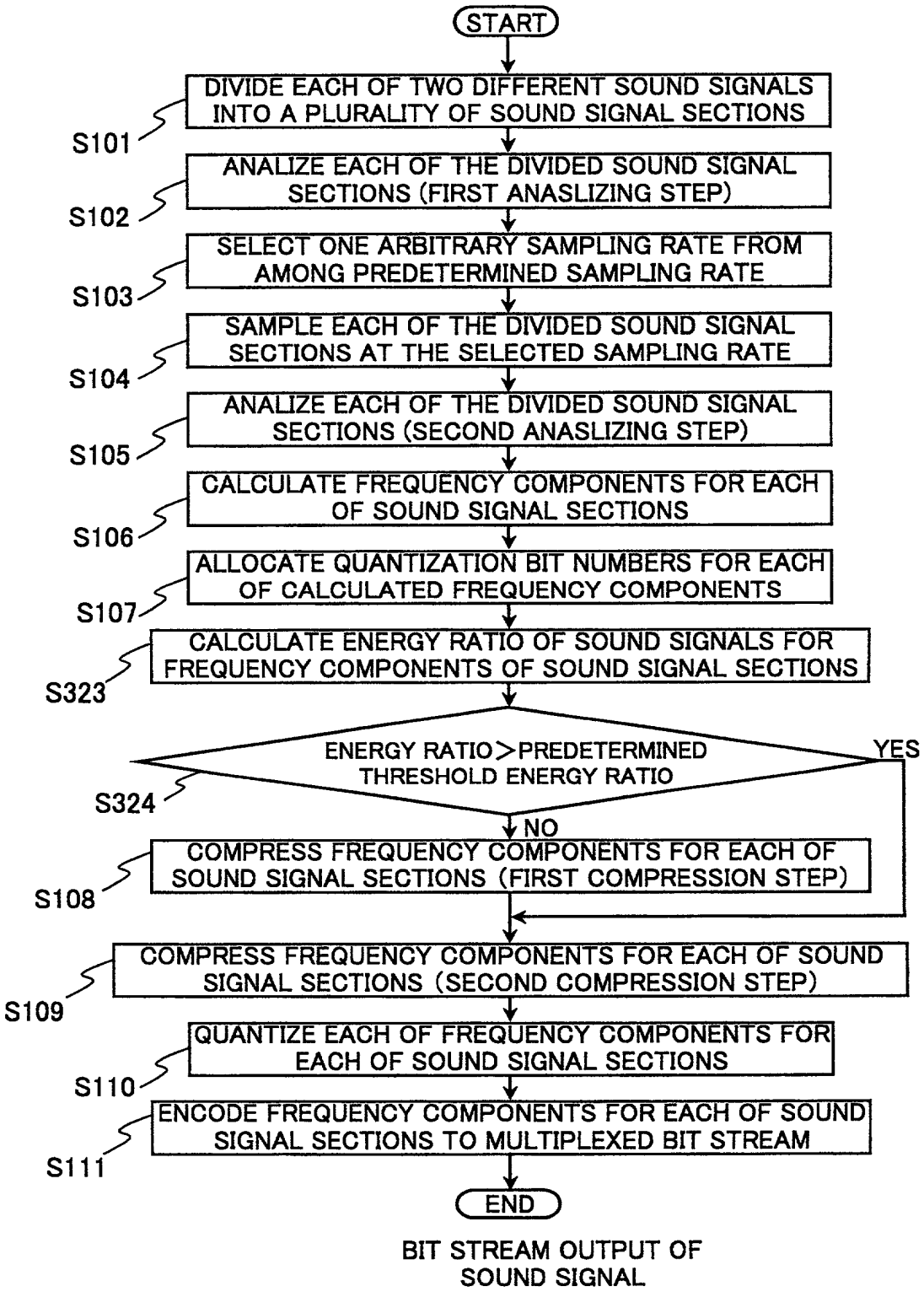

START
DIVIDE EACH OF TWO DIFFERENT SOUND SIGNALS INTO A PLURALITY OF SOUND SIGNAL SECTIONS
S101
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (FIRST ANASLIZING STEP)
S102
SELECT ONE ARBITRARY SAMPLING RATE FROM AMONG PREDETERMINED SAMPLING RATE
S103
SAMPLE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS AT THE SELECTED SAMPLING RATE
S104
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (SECOND ANASLIZING STEP)
S105
CALCULATE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S106
ALLOCATE QUANTIZATION BIT NUMBERS FOR EACH OF CALCULATED FREQUENCY COMPONENTS
S107
CALCULATE COMPLESSION LEVELS OF SOUND SIGNALS
S221
COMPRESS FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS (FIRST COMPRESSION STEP)
S108
COMPRESSION LEVELS>PREDETERMINED THRESHOLD COMPRESSION LEVEL
S222
YES
NO
COMPRESS FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS (SECOND COMPRESSION STEP)
S109
QUANTIZE EACH OF FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S110
ENCODE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS TO MULTIPLEXED BIT STREAM
S111
END
BIT STREAM OUTPUT OF SOUND SIGNAL

FIG. 9



BIT STREAM OUTPUT OF SOUND SIGNAL

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FIG. 10

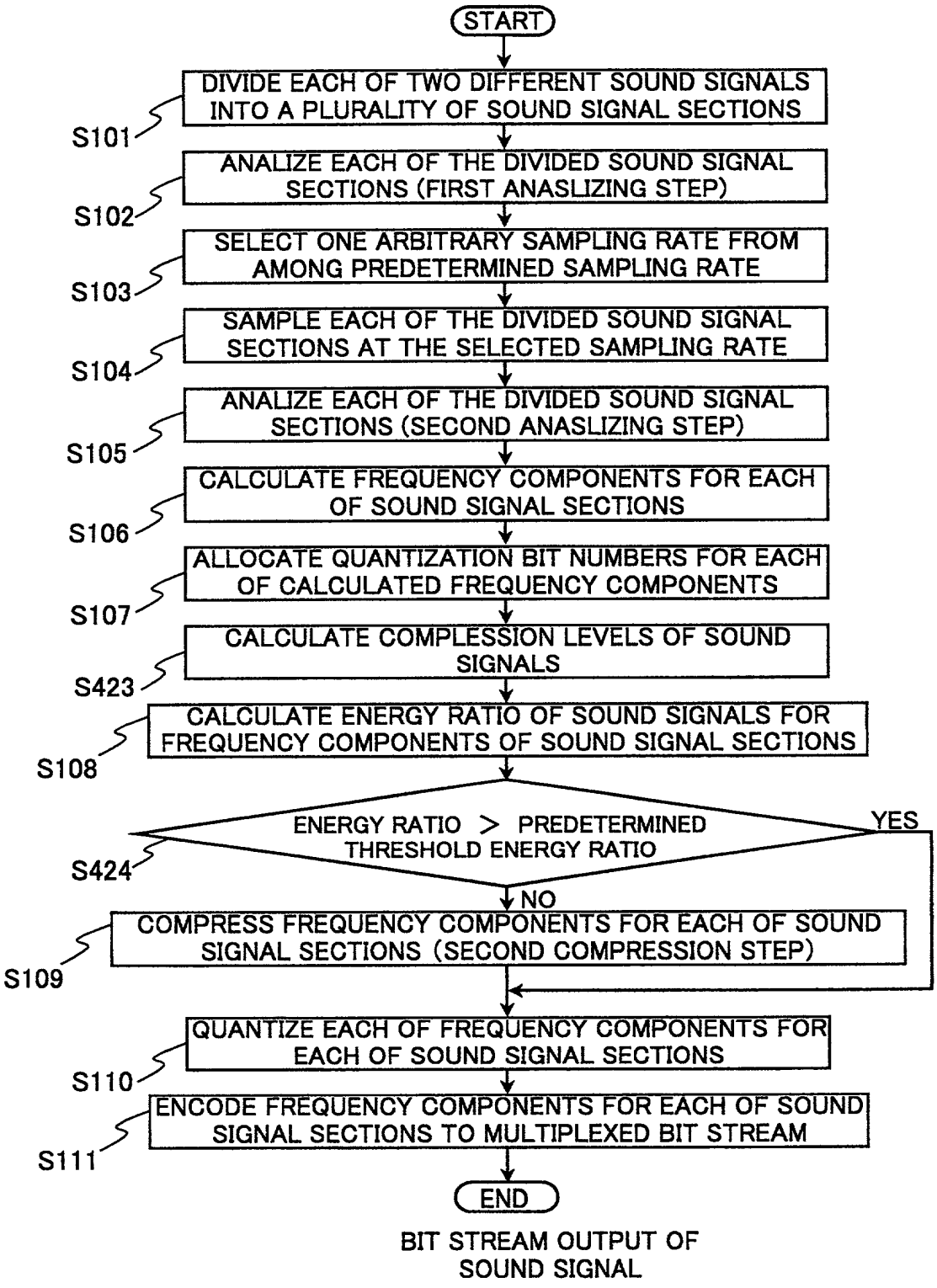
START
DIVIDE EACH OF TWO DIFFERENT SOUND SIGNALS INTO A PLURALITY OF SOUND SIGNAL SECTIONS
S101
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (FIRST ANASLIZING STEP)
S102
SELECT ONE ARBITRARY SAMPLING RATE FROM AMONG PREDETERMINED SAMPLING RATE
S103
SAMPLE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS AT THE SELECTED SAMPLING RATE
S104
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (SECOND ANASLIZING STEP)
S105
CALCULATE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S106
ALLOCATE QUANTIZATION BIT NUMBERS FOR EACH OF CALCULATED FREQUENCY COMPONENTS
S107
CALCULATE COMPLESSION LEVELS OF SOUND SIGNALS
S423
CALCULATE ENERGY RATIO OF SOUND SIGNALS FOR FREQUENCY COMPONENTS OF SOUND SIGNAL SECTIONS
S108
ENERGY RATIO > PREDETERMINED THRESHOLD ENERGY RATIO
S424
YES
NO
COMPRESS FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS (SECOND COMPRESSION STEP)
S109
QUANTIZE EACH OF FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S110
ENCODE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS TO MULTIPLEXED BIT STREAM
S111
END
BIT STREAM OUTPUT OF SOUND SIGNAL

FIG. 11

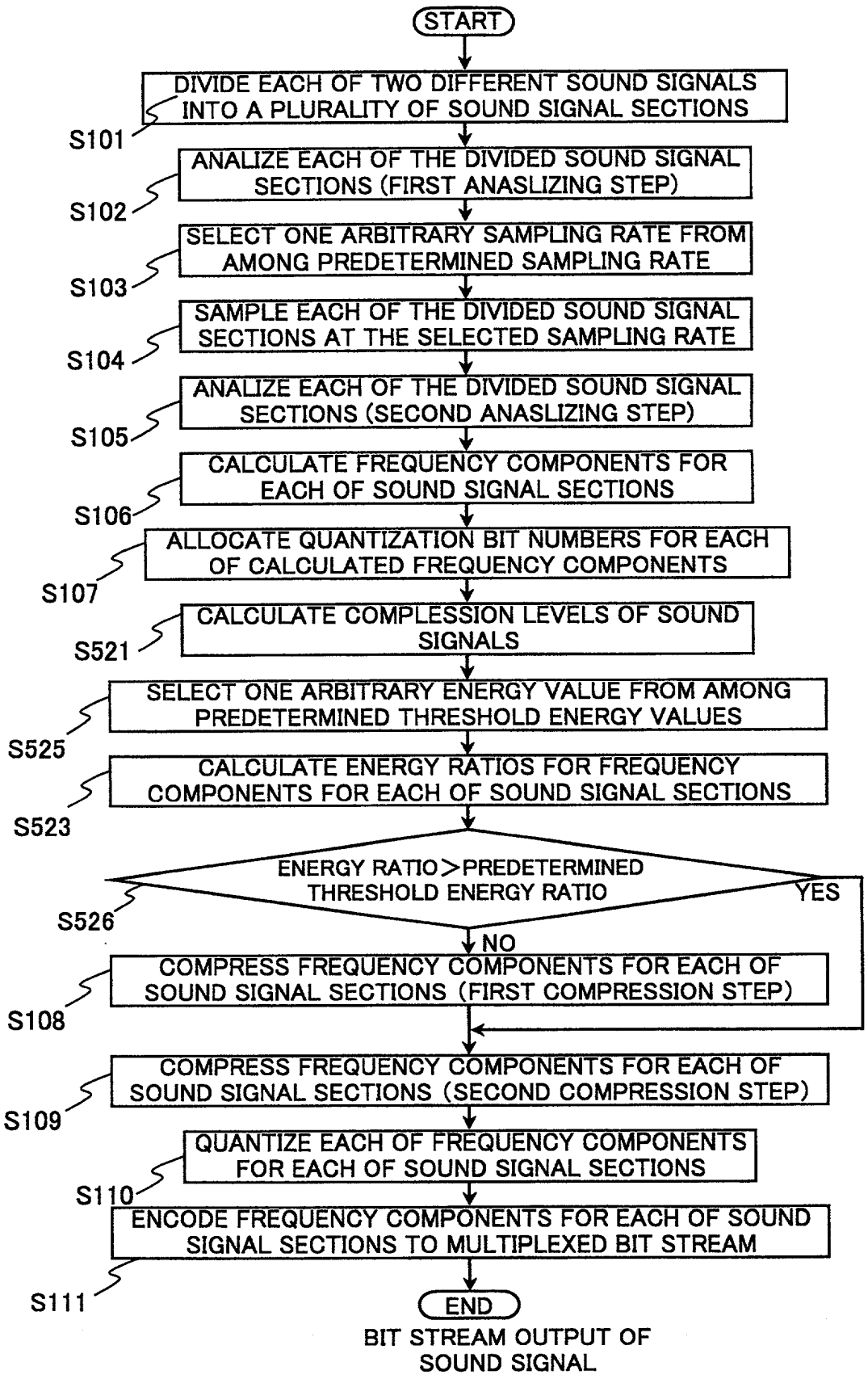
START
DIVIDE EACH OF TWO DIFFERENT SOUND SIGNALS INTO A PLURALITY OF SOUND SIGNAL SECTIONS
S101
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (FIRST ANASLIZING STEP)
S102
SELECT ONE ARBITRARY SAMPLING RATE FROM AMONG PREDETERMINED SAMPLING RATE
S103
SAMPLE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS AT THE SELECTED SAMPLING RATE
S104
ANALIZE EACH OF THE DIVIDED SOUND SIGNAL SECTIONS (SECOND ANASLIZING STEP)
S105
CALCULATE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S106
ALLOCATE QUANTIZATION BIT NUMBERS FOR EACH OF CALCULATED FREQUENCY COMPONENTS
S107
CALCULATE COMPLESSION LEVELS OF SOUND SIGNALS
S521
SELECT ONE ARBITRARY ENERGY VALUE FROM AMONG PREDETERMINED THRESHOLD ENERGY VALUES
S525
CALCULATE ENERGY RATIOS FOR FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S523
ENERGY RATIO>PREDETERMINED THRESHOLD ENERGY RATIO
S526
YES
NO
COMPRESS FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS (FIRST COMPRESSION STEP)
S108
COMPRESS FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS (SECOND COMPRESSION STEP)
S109
QUANTIZE EACH OF FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS
S110
ENCODE FREQUENCY COMPONENTS FOR EACH OF SOUND SIGNAL SECTIONS TO MULTIPLEXED BIT STREAM
S111
END
BIT STREAM OUTPUT OF SOUND SIGNAL

FIG. 12

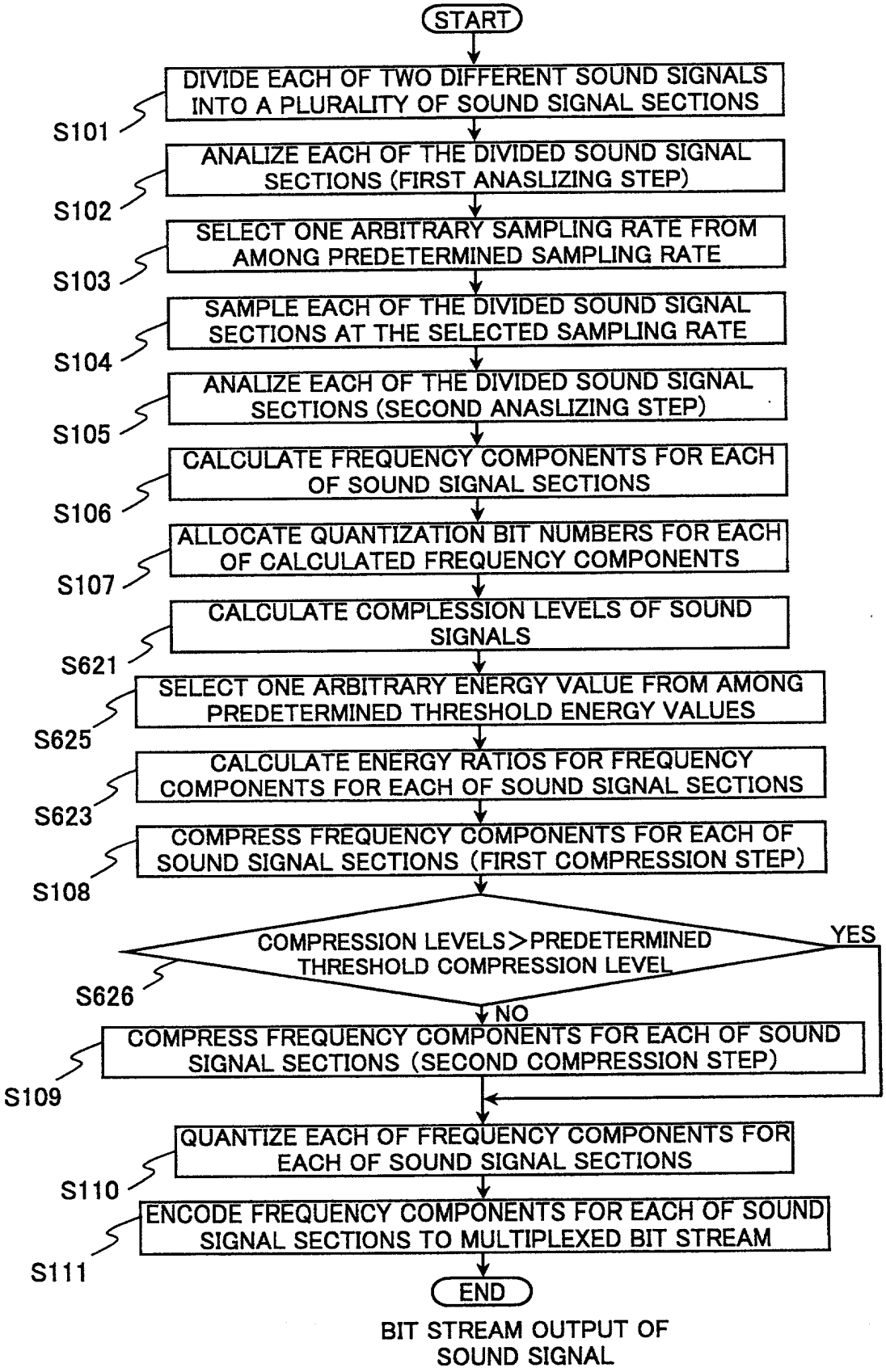

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FIG. 13

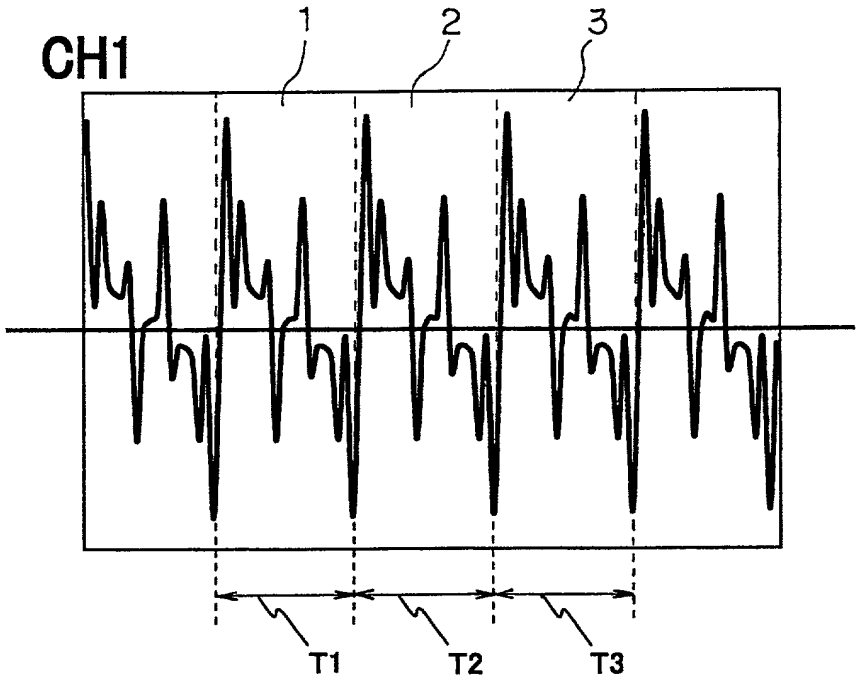

FIG. 14

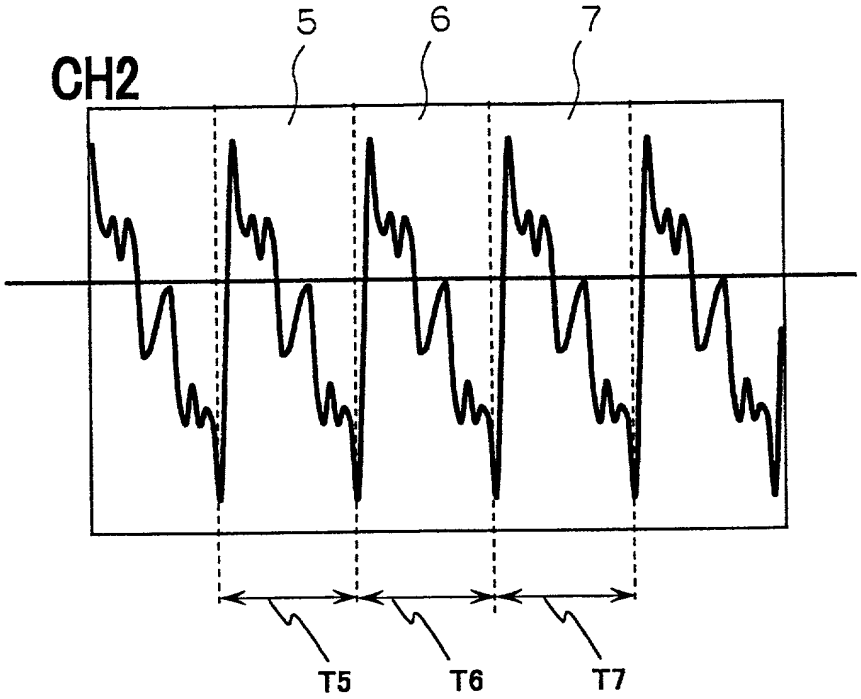

FIG. 15

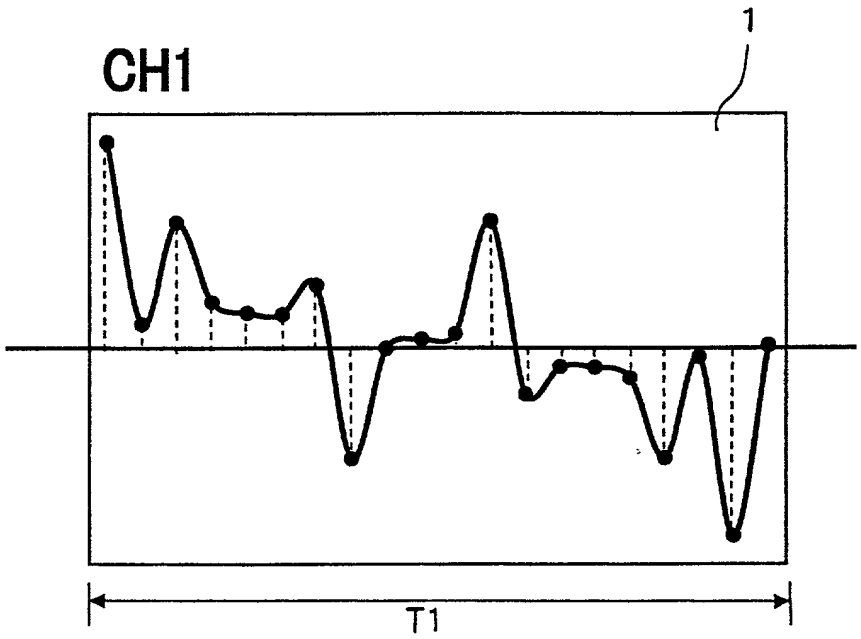

FIG. 16

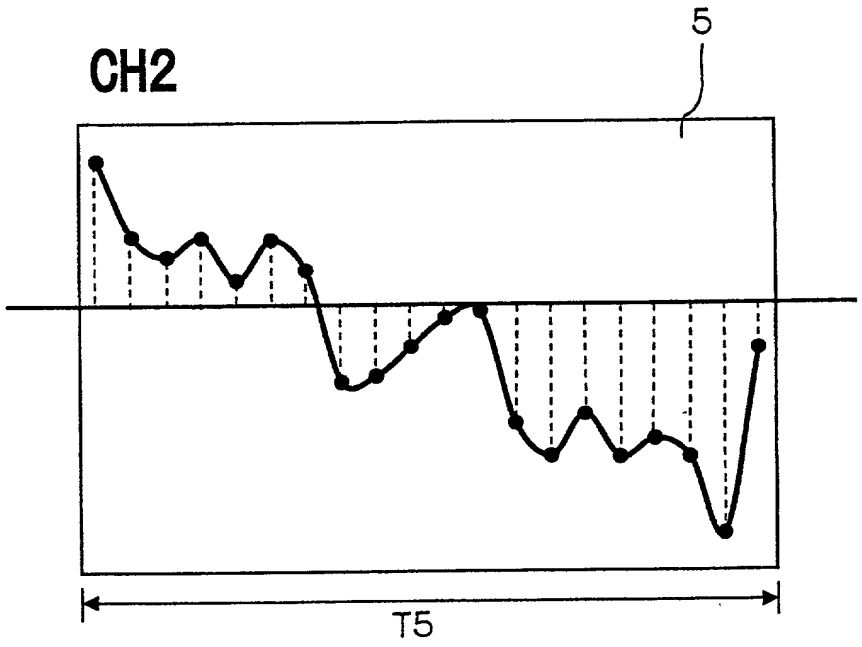

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FIG.17

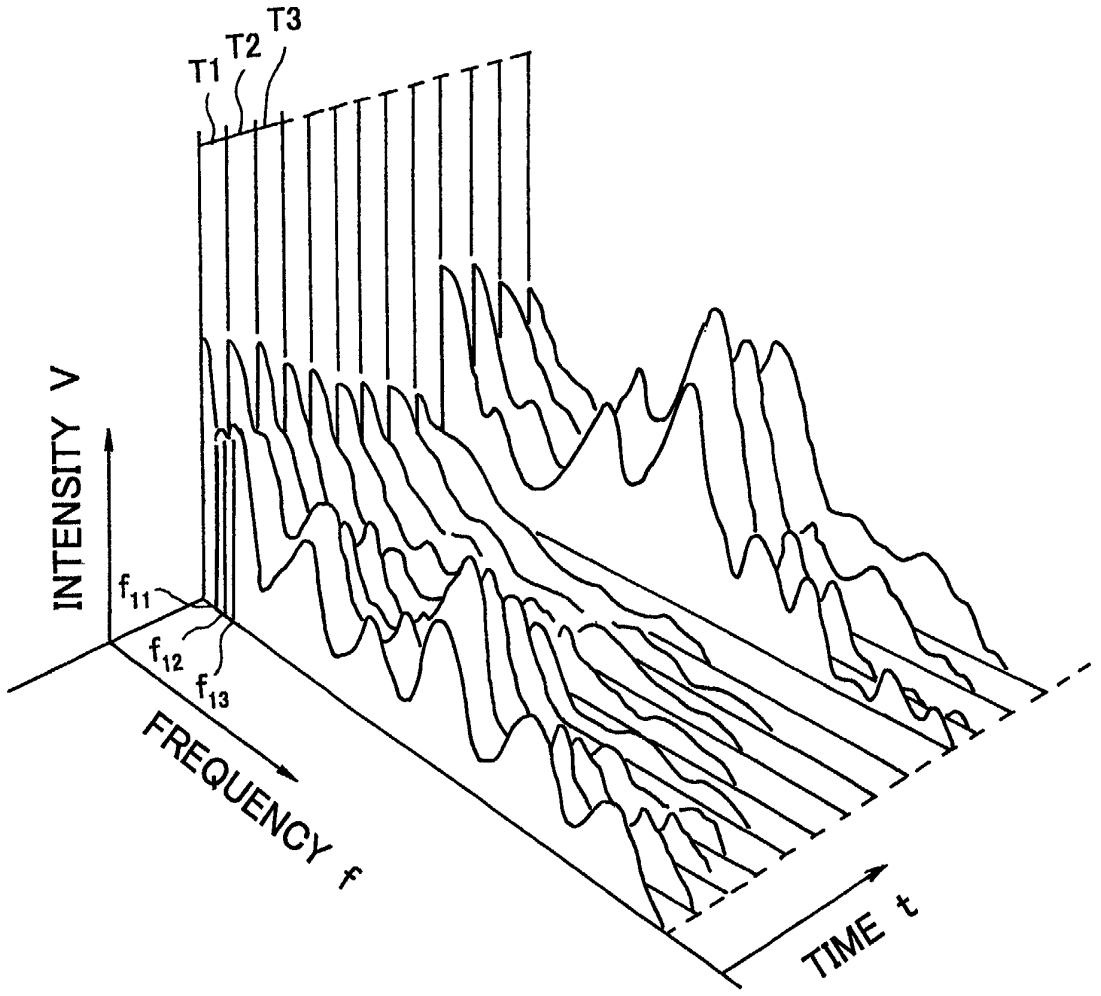

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FIG.18

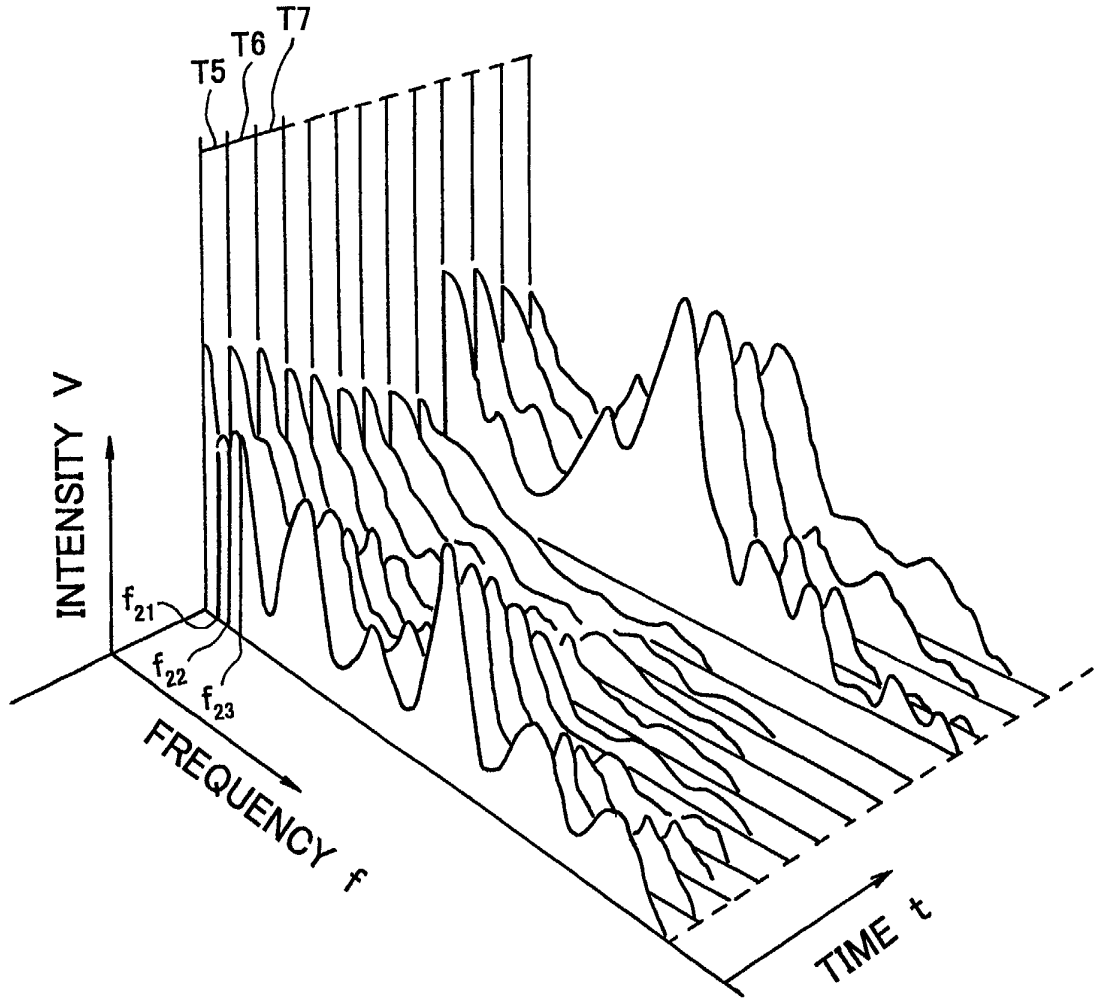


FIG.19

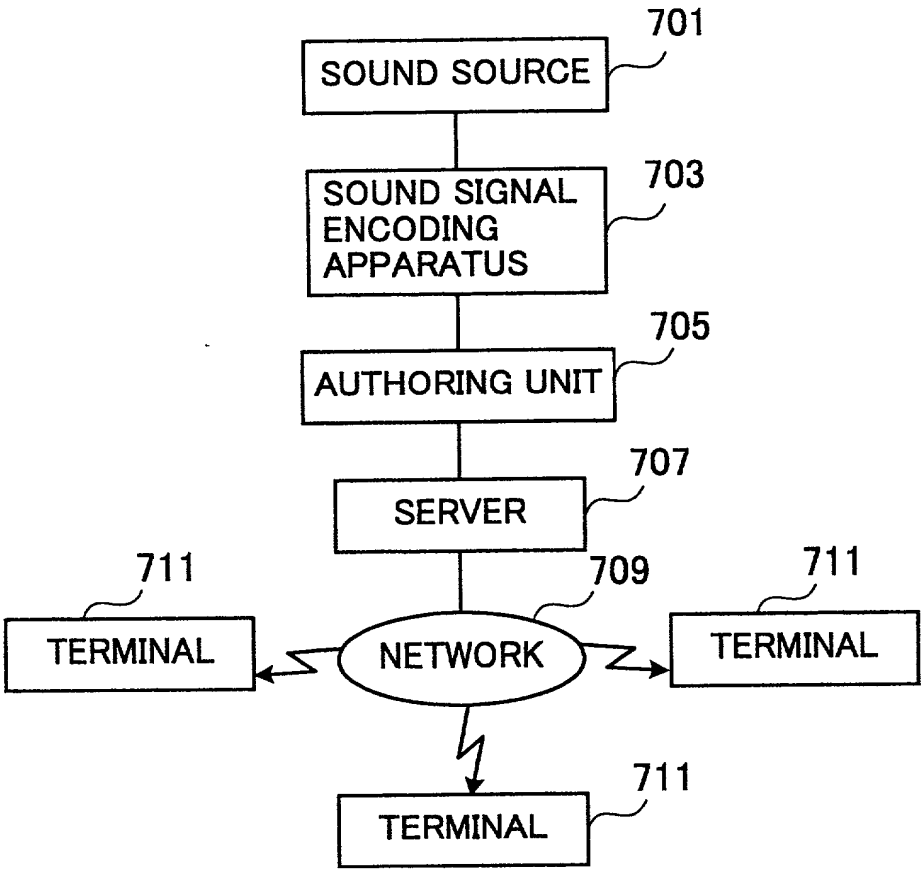
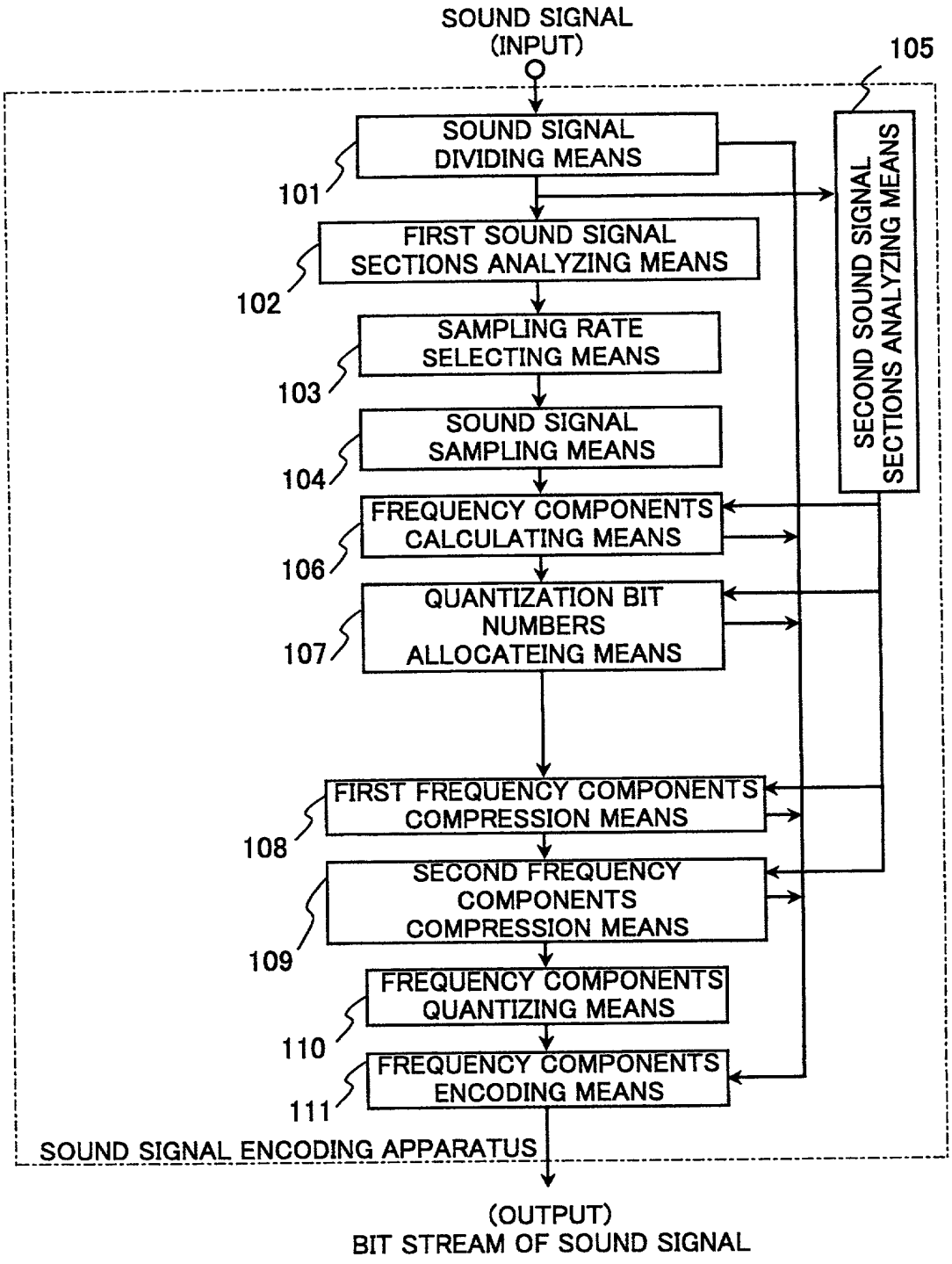

701
SOUND SOURCE
703
SOUND SIGNAL ENCODING APPARATUS
705
AUTHORING UNIT
707
SERVER
711
TERMINAL
709
NETWORK
711
TERMINAL
711
TERMINAL
700

FIG. 20


SOUND SIGNAL
(INPUT)
105
SOUND SIGNAL
DIVIDING MEANS
101
FIRST SOUND SIGNAL
SECTIONS ANALYZING MEANS
102
SAMPLING RATE
SELECTING MEANS
103
SOUND SIGNAL
SAMPLING MEANS
104
FREQUENCY COMPONENTS
CALCULATING MEANS
106
QUANTIZATION BIT
NUMBERS
ALLOCATEING MEANS
107
SECOND SOUND SIGNAL
SECTIONS ANALYZING MEANS
FIRST FREQUENCY COMPONENTS
COMPRESSION MEANS
108
SECOND FREQUENCY
COMPONENTS
COMPRESSION MEANS
109
FREQUENCY COMPONENTS
QUANTIZING MEANS
110
FREQUENCY COMPONENTS
ENCODING MEANS
111
SOUND SIGNAL ENCODING APPARATUS
(OUTPUT)
BIT STREAM OF SOUND SIGNAL